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ABSTRACT

The objective of this study is to examine and compare the determinants of migration for households grouped first by race and then by poverty level. Household demographic and economic characteristics are defined in the context of a linear probability function. A measure of the expected gain from migration is developed to reflect the relative benefit of leaving the area of origin. The data, covering annual observation periods 1968-69 and 1969-70, are generated from the first three interview waves of the Panel Study on Income Dynamics, Institute for Social Research, University of Michigan. The sample study focuses on household headed by persons less than 45 years old who are in the labor force at the beginning of an observation period. The dependent variable, migration behavior, is dichotomous, defining migration to include any change in the household's state of residence or any move between a metropolitan and a non-metropolitan area within the state of residence. Independent variables are specified as characteristics of the household head and characteristics of the household. The former reflect the primary importance of the head as decision maker, while the latter may be interpreted as barriers to moving. It is shown that the response of the poor to migration determinants is substantially different from that of the non-poor. (Author/JM)

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A COMPARISON OF HOUSEHOLD MIGRATION DETERMINANTS BY POVERTY LEVEL AND RACE

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I. INTRODUCTION

The analysis of migration behavior has generally taken one of two approaches. The first, using aggregate data on migration flows between areas, has confirmed the hypothesis that a difference in economic opportunity between areas stimulates migration. The second, using survey rather than aggregate data, has provided a more detailed profile of the characteristics identifying migrants. Each approach, however, gives only a partial view of the determinants of migration. Survey studies, while well suited to identify the personal characteristics which stimulate migration, have not incorporated the effects of economic incentives as fully as aggregate studies. Although both approaches have noted significant differences in migratic. behavior among race or age groups, they have not generated results wh'.n can be readily generalized to other groups of interest, such as the poor. Recent interest in antipoverty policies and income maintenance programs directed toward the poor suggest the need for explicit analysis of this group.

The objective of this study is to examine and compare the determinants of migration for households grouped first by race and then by poverty level. Household demographic and economic characteristics are defined in the context of a linear probability function.[1] A measure of the expected gain from migration is developed to reflect the relative benefit of leaving the area of origin. It is shown that the response of the poor to migration determinants is substantially different than that of the nonwhites.

II. THE MODEL

The data, covering annual observation periods 1968-1969 and 1969-1970, are generated from the first three interview waves of the Panel Study on Income Dynamics, Institute for Social Research, University of Michigan. Although panel studies are inherently limited by their inability to trace all people who move, losses between the first and third interview waves are relatively small. More importantly, the advantage of having detailed premigration data outweighs the disadvantages of sample attrition over time. The study sample focuses on households headed by persons less than 45 years old who are in the labor force at the beginning of an observation period.

The dependent variable, migration behavior, is dichotomous, defining migration to include any change in the household's state of residence or any move between a metropolitan[2] and a nonmetropolitan area within the state of residence between two interview dates. Intercounty moves between metropolitan or nonmetropolitan areas of the same state are not included.

Independent variables are specified as characteristics of the household head and characteristics of the household. The former reflect the primary importance of the head as decision-maker, while the latter may be interpreted as barriers to moving. All variables, except the expected gain measure, refer to conditions at the beginning of an observation period. The independent variables are:

HO - homeownership (dichotomous)

FS - family size

NH - creation of a new household unit during the observation period by one or more adult members of a previously existing household (dichotomous)

LR - length of residence measured as an inverse scale reflecting the year the household moved into the dwelling unit occupied at the beginning of the observation period

FY - family income from all sources and all members for the year preceding the observation period

PM - previous migration of the head from his (her) state of birth (dichotomous)

A - age of the head

F - female head (dichotomous)

ED - education of the head measured as an eight interval scale

EG - the expected gain to the head from leaving the current location.

Previous analyses of migration flows between areas have determined the significance of economic opportunities in attracting migrants (Greenwood, 1969; Fabricant, 1970). These effects have been observed in aggregate studies of out-migration (Blanco, 1964; Bowles, 1970), but have seldom been incorporated in studies of individual behavior. County mean income or unemployment levels provide only a measure of the opportunity cost to leaving an area (Lansing and Mueller, 1967). The expected gain measure used in this study provides a more inclusive indication of an area's relative attractiveness to a potential migrant.

The expected gain measure is composed of two parts: (1) the expected income if migration occurs, and (2) the opportunity cost of leaving the current location. It can be expressed as $EG = \left[\sum_{j=1}^{n} p_{ij}\bar{Y}_j\right] - \bar{Y}_i \Big/ \bar{Y}_i$ where $\sum_{j=1}^{n} p_{ij} = 1$. Eighteen regions, j, are defined as potential destinations.[3] The expected income if migration occurs is a sum over all destinations of the income prevailing in each potential destination, $\bar{Y}_j$,

and the probability, p_{ij}, that that area will be selected.[4] It is then compared to the opportunity cost of leaving the current area, $\bar{Y}_i$, to determine the expected gain from moving.

The probability of selecting any given destination, p_{ij}, represents the influence of distance, previous migration streams, previous economic differentials, and information flow between the two areas (Nelson, 1959; Greenwood, 1969). Operationally, this weight is the proportion of migrants by race from a given Census division to move to each of the eighteen potential destinations during the 1955-1960 period.[5]

The income measures are based on 1967 Social Security earnings estimates. Income prevailing in a potential destination, $\bar{Y}_j$, is the mean earnings by sex, race, and age for the area. The opportunity cost of moving, $\bar{Y}_i$, is the mean earnings by sex, race, and age for the metropolitan or nonmetropolitan area of the person's state of residence. Use of the person's own wage earnings in the year prior to the observation period is less satisfactory, since it does not measure permanent income; nor does it reflect other alternatives within the broadly defined origin area which do not require migration, e.g., job change.

The expected gain measure incorporates the "push" effect of local conditions and the "pull" effect of likely destinations to reflect the relative attractiveness of the origin. The probability of moving is expected to increase, ceteris paribus, the greater the expected gain.

An alternate specification of discounted gains to the potential migrant was precluded by data limitations.[6]

III. DETERMINANTS OF MIGRATION BY RACE

Observations from both the 1968-1969 and 1969-1970 periods were pooled. Multiple regression analysis using ordir _y least squares (OLS) techniques was used to estimate a set of equations[7] for each of two groups defined by race and poverty level.

Table 1 presents parameter estimates for the two racial groups. Coefficients of dichotomous variables are interpreted as deviations from the zero value catagory. For example, among white households, homeownership decreases the probability of migrating by .0447. For continuous or integer variables such as family income or education, the coefficients indicate the change in the probability of migrating given a one-unit change in the independent variable.[8]

As suggested in previous studies (Bowles, 1970; Greenwood, 1970), the model appears to fit better for white than for nonwhite households. The same coefficients are significant for both groups, but they are of generally greater magnitude for the white households. Evaluating the elasticities of selected variables at the appropriate means, as in Table 2, indicates a greater sensitivity by nonwhites in four of six instances. The strong negative effects of age and family size and the weak positive effect of income relative to those for whites suggest why nonwhite migration rates are relatively low. But the strong response to expected gains indicates that nonwhites do indeed react to economic incentives. Discussion of specific coefficients is grouped in the following sections by variable type.

Table 1

REGRESSION RESULTS FOR WHITE AND NONWHITE HOUSEHOLDS

Independent Variables	White		Nonwhite	
	Regression Coefficient	Standard Error	Regression Coefficient	Standard Error
Constant	.1852	.1168	.1951	.1159
Age of the head	$-.0299^{a}$	.0072	$-.0199^{a}$	.0069
(Age of the head)^2	$.0005^{a}$	.0001	$.0003^{a}$	.0001
Sex of the head	.0094	.0167	-.0059	.0122
Education of the head	.0057	.0030	$.0077^{b}$	.0035
Previous migration of the head	$.0850^{a}$	.0114	$.0344^{a}$	.0113
Family size	.0040	.0031	-.0034	.0022
New household formation	$.1655^{a}$	.0022	$.1039^{a}$	.0212
Home ownership	$-.0447^{a}$	.0122	-.0178	.0129
Length of residence	$.0085^{a}$	.0023	.0006	.0023
Total family income	$.22\times10^{-4a}$	$.44\times10^{-5}$	$.14\times10^{-4b}$	$.62\times10^{-5}$
[Total family income]. Age	$-.49\times10^{-6a}$	$.12\times10^{-6}$	$-.38\times10^{-6b}$	$.17\times10^{-6}$
Expected gain	$.1831^{a}$	.0422	$.1075^{a}$	.0288
Corrected coefficient of determination	.1243		.0779	

[a]Significant at the .01 level.

[b]Significant at the .05 level.

Table 2

SELECTED ELASTICITIES OF MIGRATION BY RACE[a]

Independent Variables	Whites	Nonwhites
Expected gain	2.278	2.614
Age of the head	-1.159	-2.095
Total family income	.764	.240
Length of residence	.546	.075[b]
Education of the head	.534[b]	.582
Family size	.186[b]	-.365[b]

[a]Based on Table 1 using mean values for all components.

[b]Based on coefficients which are not significant at .05 level.

Characteristics of the Household Head

The effect of age is highly significant and nonlinear for both white and nonwhite household heads. The marginal effect of age at age 20 is -.015 for whites compared to -.010 for nonwhites.[9] By age 32, however, the effect declines to -.002 for both groups. As might be anticipated, the effects for which age is a proxy, i.e., stage in the life cycle, decreasing pay-out period, increasing nonpecuniary costs, are irreversible, cummulative, and confined to a very limited range. Both whites and nonwhites display, as well, a significant negative interaction between age and income; the higher the income, the stronger the age effect.[10] In a sense, the burden of low income offsets the nonpecuniary cost or inertia reflected by age.

Previous migration experience of the head has a significant positive influence on both groups. Unfortunately, the measure reflects lifetime mobility which is higher for nonwhites than for whites because of historical migration out of the South. As a result, the effect of recent migration is undoubtedly understated, especially for nonwhites. The positive effect can be interpreted as reflecting the lower nonpecuniary costs incurred by experienced migrants. The presence of persons in highly mobile occupations or of people returning to "home" areas after temporary absences would also contribute to the positive effect.

Education of the head is positive, but significant only for nonwhites. The higher elasticity for nonwhites may reflect the generally improving returns to nonwhite education during the 1960s.[11]

Household Characteristics

Homeownership and length of residence measures are significant only for white households. Together they indicate the substantial effect that community ties provide as an obstacle to moving.

The family size variable which may reflect psychic costs to moving, i.e., the extent of social disruption, is not significant in either group. Large families, especially among nonwhites, may, however, reflect the presence of multigenerational households. Such households are not likely to move as a unit, thus contributing to the negative coefficient.

Creation of new household units is strongly related to the probability of moving in both groups. In most cases this measure identifies the initial stage in the household cycle, i.e., entry into the labor force and/or marriage of young adults.[12] The smaller coefficient for nonwhites

suggests the presence of relatively less attractive opportunities, i.e., higher unemployment rates, for persons under 21 years of age. The strong influence of this measure and that of age underscores the importance of the life cycle as a determinant of migration.

Economic Characteristics of the Household

The expected gain variable has a highly significant positive effect on migration in both groups. Expressed as an elasticity evaluated at the appropriate means, the effect is twice as great as any other. Nonwhite households are somewhat more sensitive (2.61 vs. 2.28).

The expected gain variable measures the relative attractiveness of the area of origin. In previous studies a simple binary measure of rural-urban area or, more appropriately, the average income of the area of origin (Lansing and Mueller, 1967, p. 103) has served a similar function. When the model is rerun substituting the latter (the 1967 mean earnings of households by race, age, and sex for each origin) for the expected gain variable, the overall explanatory power of the model declines in both groups. For white households the coefficient on the simple mean income is no longer significant. These results indicate that households of both races do respond to more than the "push" of local conditions when considering the migration decision.

Total family income has a significant, but small, positive effect which declines with age in both groups. The marginal effect of a $1000 increase in family income for households headed by white 20-year-olds is .012; it is half as large for similar nonwhite households. For older households, age 32, these figures drop to .006 and .002, respectively.

In terms of elasticities evaluated at the appropriate means, the white household is three times as responsive to income changes as the nonwhite household (.764 vs. .240).

The positive effect of total family income on migration can be interpreted in two ways. It may be a cost constraint reflecting the ability of the household to finance and insure against the risks associated with the move. Low income households may be especially reluctant to move to a new location. Risk, or the possibility of an outcome even worse than the current situation, depends on the household's knowledge of the new area, its prospects for employment, and its ability to bear the associated investment costs of job search until the transition to the new area is complete. The higher the family resources before the move, the easier these costs of transition are to bear and the more likely that the expected benefits of the move will be realized.

Alternately, total family income may simply be a proxy for the household head's earnings which are a large part of total income. It can be argued that the employment situation of the head, e.g., his occupation, career development opportunities, relative earnings, and ability, is reflected in current earnings and dominates the household migration decision.

To clarify these two roles, a measure of the household head's earnings in the year prior to the observation period was substituted for total family income in a preliminary analysis. If total family income were merely a proxy for the head's earnings, the substitution should have resulted in increased explanatory power of the model. The resulting

insignificant coefficient on the head's earnings does not support this interpretation.[13]

The lower responsiveness of nonwhite households to changes in total income and the significance of the negative age interaction are consistent with the cost constraint interpretation. Nonwhites and older heads may perceive higher risks of moving. Marginal increases in income are then less effective in offsetting these risks. To the extent that nonwhite and older households are likely to have multiple earners, the uncertainty of moving and reestablishing several earners makes risk higher at given total income levels. Consequently, a lower response to change in total income may be expected.

It is tempting to extend the results of the analysis to a discussion of the behavior of low income groups. The more satisfactory fit of the model for white household migration suggests that the model will also explain the behavior of the nonpoor more completely than that of the poor. But the poor are a heterogeneous group not easily described by any one demographic trait (Lampman, 1969). To correctly determine whether they are more or less mobile and whether they are sensitive to key parameters such as income and expected gain it is necessary to analyze the behavior of the poor directly.

IV. DETERMINANTS OF MIGRATION BY POVERTY LEVEL

The sample was separated into four groups which are arbitrarily defined as households with poverty ratios[14] 1) under 1.25; 2) between 1.25 and 1.99; 3) between 2.00 and 3.99; and 4) over 3.99. The groups can

usefully be interpreted as designating poor and nonpoor households, the former being households with poverty ratios of 1.25 or less. These include the chronic poor and the near-poor who may be likely to fall below the official poverty line with a minimal change in their income or family size. The nonpoor households are divided into three classes to encompass several distinct levels of socioeconomic status.

Defining the poor on the basis of the poverty ratio eliminates distortion due to the high correlation between age and low income. The use of an income definition of poverty would undoubtedly overstate the importance of young people in the poor classification. This basis would be misleading, since the motivation and behavior of a 20-year-old man earning $3000 would, obviously, be different from those of a family of four earning the same amount. Both young (under 20) and older (over 35) household heads are slightly overrepresented in the poor group. But the similarity of mean ages for all groups and the age distributions indicate that the poor group does not heavily favor the young.

Because the poverty ratio is calculated on current rather than permanent income, households which have temporary income fluctuations may be misclassified. Kelly (1970, p. 24) indicates the importance of transitory income changes in the escape and entrance rates of households into the official poverty population (poverty ratio less than or equal to 1.0). Approximately 36 percent of the households classified as poor in 1965 escaped in 1966, while 6 percent of the nonpoor households in 1965 had entered poverty by 1966. It is not possible to eliminate the problem of

misclassification due to transitory income components per se, but by considering the poor and near-poor households as a single group, the problem of excluding a substantial number of chronically poor households is minimized.

The model used is the same as that applied to the racial groups in Table 1 with the exception of a binary race variable. It is estimated for each poverty group using an ordinary least squares technique. The results, presented in Table 3, show that coefficients are of the expected sign in most cases and the explanatory power of the model is quite high.[15] The strong results for groups 1 and 3 are somewhat unexpected. A priori indications from the racial analysis, previous studies, and some preliminary results for age-race-sex groups suggest that the model will work best for white, well-educated households, i.e., generally the nonpoor. Table 3 shows that just the reverse is true; the model's explanatory power is highest for the poorest group and lowest for the richest group.

Expressing coefficients as elasticities evaluated at the appropriate means provides a clearer picture of variations in sensitivity to selected determinants (Table 4). All groups are highly responsive to the expected gain measure, especially the poor. The age effect is strong for all groups except the richest. The poor are again most sensitive to age effects. In general, households with poverty ratios less than 2.0 are relatively more sensitive to migration determinants than households with higher poverty ratios. The following sections discuss and compare specific coefficient estimates.

Table 3

REGRESSION RESULTS FOR HOUSEHOLDS
BY POVERTY GROUP

Independent Variables	Poverty Group			
	0-1.24	1.25-1.99	2.00-3.99	4.00+
Constant	-.0231 (.1339)[c]	.2383 (.1752)	-.2930[b] (.1550)	.1128 (.3770)
Age of the head	-.0172[a] (.0080)	-.0341[a] (.0106)	-.0004 (.0093)	-.0096 (.0216)
(Age of the head)^2	.0003[a] (.0001)	.0005[a] (.0002)	.0001 (.0002)	.0001 (.0003)
Race of the head	-.0371[a] (.0147)	-.0104 (.0164)	-.0793[a] (.0164)	-.1253[a] (.0473)
Sex of the head	.0082 (.0150)	-.0106 (.0225)	-.0167 (.0211)	-.0544 (.0468)
Education of the head	.0084[b] (.0044)	.0128[a] (.0047)	.0050 (.0037)	-.0023 (.0073)
Previous migration of the head	.0516[a] (.0144)	.0572[a] (.0164)	.0709[a] (.0138)	.0854[a] (.0271)
Family size	-.0096[a] (.0032)	-.0149[a] (.0066)	-.0073 (.0055)	.0010 (.0119)
New household formation	.0931[a] (.0262)	.0748[a] (.0362)	.1658[a] (.0256)	.0379 (.0597)
Home ownership	-.0128 (.0164)	.0025 (.0182)	-.0707[a] (.0152)	-.0627[a] (.0304)
Length of residence	.0058[a] (.0027)	.0113[a] (.0036)	.0045 (.0029)	.0080 (.0055)
Total family income	$.96\times10^{-4}$[a] ($.1\times10^{-4}$)	$.48\times10^{-4}$[a] ($.13\times10^{-4}$)	$.46\times10^{-4}$[a] ($.7\times10^{-5}$)	$-.73\times10^{-5}$ ($.12\times10^{-4}$)
[Total family income] . Age	$-.24\times10^{-5}$[a] ($.34\times10^{-6}$)	$-.8\times10^{-6}$[a] ($.39\times10^{-6}$)	$-.1\times10^{-5}$[a] ($.24\times10^{-6}$)	$.26\times10^{-6}$ ($.32\times10^{-6}$)
Expected gain	.1703[a] (.0379)	.1297[a] (.0527)	.1060[a] (.0485)	.1495 (.1019)
Corrected coefficient of determination	.1970	.0998	.1674	.0363

[a]Significant at the .05 level.
[b]Significant at the .10 level.
[c]Standard error.

Table 4

MIGRATION ELASTICITIES FOR HOUSEHOLDS BY POVERTY GROUP[a]

Independent Variables	Poverty Group			
	0-1.24	1.25-1.99	2.0-3.99	4.0+
Expected gain	2.90	1.90	1.53	2.18[b]
Age of the head	-3.62	-3.40	-1.90[b]	.70[b]
Total family income	1.26	2.14	2.16	.34[b]
Length of residence	.48	.86	.34[b]	.64[b]
Education of the head	.42	.70	.34[b]	-.20[b]
Family size	-.76	-.92	-.36[b]	.04[b]

[a]Based on mean values and coefficients from Table 3.

[b]Based on coefficients which are not significant at the .10 level.

Characteristics of the Household Head

The effect of previous migration experience is significant in all four groups, showing a strong, increasingly positive trend as the poverty level increases. The positive relationship indicates less resistance to change because of familiarity with the moving process. For poor households, it may also reflect a high incidence of temporary moves which ultimately lead to return moves (Bowman and Haynes, 1963). The stronger effect for higher income groups suggests an additional interpretation. Professional and highly specialized technical personnel who are concentrated in these groups operate in very broad regional labor markets. They are therefore likely to be more mobile, both in

terms of the past and the future, than other occupational groups. Since occupational classes, per se, are not included in the model, these effects may partially be reflected in the previous migration variable.

The significant coefficient for race in three of the four groups implies that there is a racial effect which is clearly distinguishable from the poverty condition. Nonwhites may have lower migration rates because of the high incidence of low income households. But they are also less mobile because they are nonwhite. For the poor households, the negative effect may be interpreted as evidence of a high discount factor reinforced by, or perhaps based on, anticipated discrimination in the labor market. As the poverty level increases, the effect of race appears to increase arithmetically. This suggests that highly educated, professional nonwhite households are highly immobile. It seems unlikely that this would be entirely explained by discrimination. In fact, it is plausible to expect that nonwhite professionals are in at least as great a demand, if not a greater demand, than comparable white professionals. A more likely explanation might be made in terms of the occupational composition of the nonwhite group at higher poverty levels. Their locational stability may be a reflection of an occupational structure weighted toward professions which do not encourage mobility, e.g., teaching, law, medicine. The lower mobility for nonwhite households with high poverty ratios may also indicate that many of these households have two earners.[16] The disruptions caused by moving and the risk of changing two jobs rather than one can be expected to increase the barriers to mobility. In this model, both effects would be reflected in the race variable.

The age variables have the expected sign in all four groups, but they are significant for only the two poorest groups. The interaction variable between age and total family income has the expected negative sign and is significant in all groups except the fourth. The marginal effect of age displays a nonlinearity similar to that noted in the racial groups. The inhibitive influence for poor households declines from -.014 at age 20 to -.002 at age 40. A similar pattern for households with poverty ratios between 1.25 and 4.0 is observed.

The education and sex of the household head add little to the model. The sex variable is not significant in any group. Education has a positive effect in three groups, but it is significant only in the second. All groups except the second can be expected to have a minimum variation between gross education levels, e.g., the poor tend to have less than a full high school education, the rich tend to have at least some college education. This suggest that only gross differences between education levels are important; education appears to be a proxy for occupational level, rather than a factor, per se.

Characteristics of the Household

Home ownership is significant and negative for households at more than twice their poverty level. Lack of significance among the poor is not surprising in light of the small number of home owners. The presence of a negative relation for the poor suggests that some of the households in this group may be experiencing a transitory poverty condition. Home ownership acts less as a financial barrier for these households than as an indication of generally favorable permanent income prospects.

OS

The length of residence measure, as well as home ownership, reflects social and psychic ties to an area which may inhibit migration. The effect is positive as hypothesized for all groups, but it is significant for only the two poorest.[17] The lower response for group 1 compared to group 2 is unanticipated, but may be due to the construction of the measure which reflects the relatively high rate of dwelling unit change for the poor as opposed to actual location change.

The family size coefficient is negative as expected for all groups except the fourth. It is significant, however, only in the first two groups. This is not surprising given the greater range in family size among the poor households. Undoubtedly, some of these very large households, e.g., 14 members, are multigenerational units which are unlikely to move as a single household. While family size may have only a limited impact on the cost of moving, it is the poor household which is most sensitive to that cost. The strength of the family size variable in group 2 is somewhat surprising. It may act as a proxy in this group for family cycle, discriminating more effectively between young single or married couples and older established families than it does in other groups.

Identification of the household as newly formed is strongly related to migration for the first three groups. A large part of this effect is undoubtedly accounted for by new entrants into the labor force. These households might be expected to concentrate in the lower poverty groups, with recent college graduates, who are probably the most mobile, in the third group.

Economic Characteristics of the Household

The expected gain variable displays a strong positive relation to migration behavior in all groups, and is significant with the exception

of group 4. A change of .1 in the expected gain variable increases the probability of migrating by .017 for poor households compared to .0130 and .0111 for households in groups 2 and 3, respectively.[18] When the coefficients are expressed in terms of mean elasticities, all groups appear highly responsive to expected gains. The poor are most sensitive with an elasticity of 2.90, substantially higher than that of group 2 (1.90) and group 3 (1.53).

High income households are likely to calculate benefits to migration in terms of specific prearranged opportunities. They are much less likely than other households to be influenced by the relative attractiveness of their location as measured by mean income, i.e., expected gain. Other considerations such as the nature of the labor market for professional or specialized personnel, or career development cannot be captured in this type of approach, but they are undoubtedly important determinants. Conversely, the poor, who are unlikely to consider specific employment before migration, are most sensitive to the relative attractiveness of locations as reflected in the expected gain measure.

Several other formulations of the expected gain variable were examined including a squared term, and interaction terms with age, race, education, and type of location. The squared term does not indicate significant nonlinearity for any of the groups. The interaction terms are generally not significant. Only one, the interaction of expected gain and residence in an SMSA, is clearly significant at both the highest and the lowest poverty levels. The negative coefficient in both cases indicates that both poor and rich are reluctant to leave the large urban areas. The availability of alternatives other than migration, i.e., job change, occupational mobility, undoubtedly contributes to this effect. Other

terms involving age and education coefficients, while not significant, display the expected signs (negative and positive, respectively). The race interaction term shows a positive sign and is close to being significant for the poor households. This result and the higher elasticity of nonwhites to expected gains observed earlier suggest that nonwhites may be more sensitive to economic incentives than previous aggregate studies have suggested.

The coefficient for the total family income measure is significant for all groups except the fourth. The interaction term is negative and significant for the same groups. For a poor household of age 20, an increase of $1000 in total family income increases the probability of migrating by .044. A similar $1000 increase for households in the second and third groups increases the probability of moving by .032 and .026, respectively. At age 32, the effect of marginal increases in income decline substantially to .019, .022, and .014 for the three respective groups. In terms of elasticities, however, the poor are least responsive to income changes. The mean elasticity for the poor (1.26) is only about half of that for households in groups 2 (2.14) and 3 (2.16). It is interesting to note that the effects in all three groups are substantially higher and more sensitive than those observed in the racial equations.

V. COMPARISONS OF THE DETERMINANTS OF MIGRATION BY POVERTY LEVEL AND RACE

Are the poor more or less sensitive than other groups to the determinants of migration? When compared to households in groups 2 and 3, poor households are relatively more responsive to only five of eleven determinants (Table 5). The poor are, however, significantly more

responsive to expected gain than other households. But the comparison indicates a curious pattern. The poor tend to be relatively more responsive to factors which inhibit migration, e.g., age, and relatively less responsive to factors which encourage migration, e.g., total family income. This pattern is noted in six of eleven instances when group 1 is compared with either group 2 or group 3. It is even more striking when the six most significant variables are considered. Four out of six comparisons follow the pattern in each instance (see variables 1, 2, 6, 7, 9, 11, Table 5).

The effect of these differential responses may contribute to the relatively low mobility rate of the poor. An approximation of the net

Table 5

RESPONSES OF POOR HOUSEHOLDS
COMPARED TO OTHER HOUSEHOLDS

Variable	Observed sign Group 1	Response of Poor Compared to: Group 2	Group 3	Nonwhites
1. Age	-	Y[a]	Y	Y
2. Race	-	Y	N	-
3. Sex	(-)[b]	N	N	N
4. Education	+	N	Y	N
5. Previous migration	+	N	N	Y
6. Family size	-	N	Y	Y
7. New household	+	Y	N	N
8. Length of residence	+	N	Y	Y
9. Total family income	+	N	N	Y
10. Home ownership	-	Y	N	N
11. Expected gain	+	Y	Y	Y

[a] Y indicates that the response of poor households, as measured by elasticities or coefficients for dichotomous variables, is greater than the response of other households: N indicates that the response of the poor is smaller.

[b] This is the expected sign not the observed sign.

effect of these response differences can be made by computing hypothetical mean migration rates for groups 2 and 3 under the assumption that they react in the same way as the households in group 1. A computed migration rate below the observed migration rate for that group would suggest that the poor are, over all, less responsive to migration determinants. The hypothetical computed migration rates are, however, virtually unchanged for group 2 and 250 percent greater than the observed rates for group 3.

Comparisons of the responses of poor households to those of nonwhite households also reveal substantial differences. Poor households appear to be more sensitive to about half the determinants, including the expected gain and total family income measures. The pattern of greater responsiveness by the poor to inhibiting factors, e.g., age, is still evident, but less strongly so.

Since most previous migration studies have focused on racial rather than poverty level interactions, it is instructive to examine the net effect of the coefficient estimate generated by the two respective approaches. The estimated probabilities of moving for selected white and nonwhite male headed households at each poverty level are computed in Table 6.[19] The probability of moving for each of these households is recalculated using the appropriate racial model. Differences between the two sets of estimates for any poverty group represent the net effect of differences between the racial and poverty group coefficients.

If it can be assumed that the estimates based on the poverty equations are, a priori, more descriptive of household behavior at a given poverty level, these differences between estimates can be interpreted as an indication of the bias resulting from the use of racial groups as

Table 6

ESTIMATED PROBABILITY OF MOVING FOR HOUSEHOLDS BY RACE AND POVERTY GROUP

Race	Estimating Model	Poverty Group			
		0-1.24	1.25-1.99	2.0-3.99	4.0+
White	Poverty[a]	.1455	.1238	.3084	.2322
	Racial[b]	.2976	.3103	.3298	.3712
Nonwhite	Poverty[a]	.1084	.1134	.2291	.1069
	Racial[b]	.1378	.1464	.1638	.1749

[a]Based on Table 3. [b]Based on Table 1.

proxies for generalizations about the poor. Estimates based on race equations (rows 2 and 4) are generally higher than those based on the poverty equations. The most serious difference is observed for white households below the 2.0 poverty level. This suggests that the equation for whites is dominated by the behavior of higher income households. This difference is especially significant since poor whites comprised more than 70 percent of the poor in 1968 (Lampman, 1969).

The results of this study indicate that 1) the poor respond differently than the nonpoor to migration determinants and 2) these differences are not well reflected in a simple racial breakdown.

NOTES

[1]For a full discussion of the statistical problems involved in using this estimating procedure see Kaluzny (1973), Chapter III.

[2]Metropolitan areas are defined as in the 1960 Census of Population, i.e., counties with cities of 50,000 or more people.

[3]Metropolitan and nonmetropolitan areas of nine Census divisions define eighteen destinations. An alternate specification using 48 states as destinations was tested for a portion of the sample. No significant improvement in the model was noted.

[4]See Brennan (1965) for a similar procedure for different possible income streams at a given location.

[5]The distribution of migrants over the 1965-1970 period in 1970 Census data would have been preferred had the 1970 Census data been available. Differences are slight, however, at this level of aggregation.

[6]A present value of expected gains would combine the differences in area opportunities with a strong, possibly dominant age effect. Since it is not clear that potential migrants use a lifetime, or even a 10-year, time horizon, the benefit of combing the age and area effects is doubtful. In addition, the income estimates, by only distinguishing two age ranges (below and above 25), do not provide sufficient detail for projecting future income profiles for each area.

[7]The use of OLS in estimating a linear probability function encounters two considerable problems: the error term in the model is heteroscedastic, and predicted values may fall outside the unit range. Adjustments for these problems using a generalized least squares or nonlinear probit technique do not seem appropriate given the large sample size (Smith and Cicchetti, 1972).

[8]The expected gain variable is estimated in the form $\left(\sum_{j=1}^{18} p_{ij} \bar{Y}_j \right) \Big/ \bar{Y}_i$ to allow for investigation of nonlinear effects. The measure ranges between .6 and 2.0. Variations in the independent variable are likely to be of the magnitude of .01 rather than 1.0. The impact of such variations in the expected gain measure is then of the magnitude (.1831) (.01) or (.1831) (.10).

[9]Evaluated at mean incomes for both groups.

[10]This is true for both groups at age 20, but only for whites at age 32.

[11]See Weiss and Williamson (1972).

[12]New households could also reflect marital status changes or dissolutions of multiple-generation households which may provide the stimulus for moving.

[13]The analysis focused on a model class of households, i.e., those headed by white males, over 25 years old and having some high school education.

[14]The poverty ratio is defined as the total family money income reported in the previous year divided by the household's annual need standard. The latter is a poverty threshold based on household size and an annual food need index. It, in turn, is derived from a USDA low-cost budget for food expenses. The annual need standard reflects small unit diseconomies by allowing: 4.89 times the annual food needs for a 1-person unit; 3.70 times the annual food needs for a 2-person unit; and 3.00 times the annual food needs for a 3-plus-person unit. (Institute for Social Research, 1969, pp. 165-237.)

[15]Lansing and Mueller (1967) use a similar regression technique. They report coefficients of determination in the range of .06 to .16 for their model.

[16]The presence of multiple earners in households with high poverty ratios may also contribute to the relatively low explanatory power of the model for group 4.

[17]The positive relation is correct, because length of residence is measured by an inverse scale; the higher the scale value, the shorter the actual duration of residence in calendar time.

[18]A change of .1 in the expected gain for males under 25 years of age in Ohio is equivalent to an average change in income differences between Ohio and other places of $442 for whites and $415 for nonwhites. For males over 25 years of age the equivalents are $882 for whites and $603 for nonwhites.

[19]Households are assigned the mean age, education, family size, length of residence, total family income, and expected gain for each poverty level. All households are assumed to be previous migrants and nonhomeowners.

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